Universitetet i Oslo
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Reliable Systems
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IN [5/9]440: static analysis

Autumn 2024 **Handout 1** 17. 09. 2024

Handout 1: Intro

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The handouts generally don't contain information which is not also on the slides. They are just there to have a look during the lecture, to follow some examples etc. better when discussing the slides.

The abstract grammar of the While language looks as follows:

$$
\begin{array}{rcll}
a & ::= & x \mid n \mid a\,\mathtt{op}_a\,a & \text{arithm. expressions} \\
b & ::= & \mathsf{true} \mid \mathsf{false} \mid \mathsf{not}\ b \mid b\,\mathtt{op}_b\,b \mid a\,\mathtt{op}_r\,a & \text{boolean expr.} \\
S & ::= & [x := a]^l \mid [\mathsf{skip}]^l \mid S; S & \text{statements} \\
 & \mid & \mathtt{if}[b]^l\,\mathtt{then}\,S\,\mathtt{else}\,S \mid \mathtt{while}[b]^l\,\mathtt{do}\,S &
\end{array}
$$

Example 1 (Factorial)**.** *The following is the code of the factorial "function" (in labelled, abstract syntax). The corresponding flow graph is given in Figure 1.*

$$[y := x]^0; [z := 1]^1; \mathtt{while}[y > 1]^2\,\mathtt{do}([z := z * y]^3; [y := y - 1]^4); [y := 0]^5 \tag{1}$$

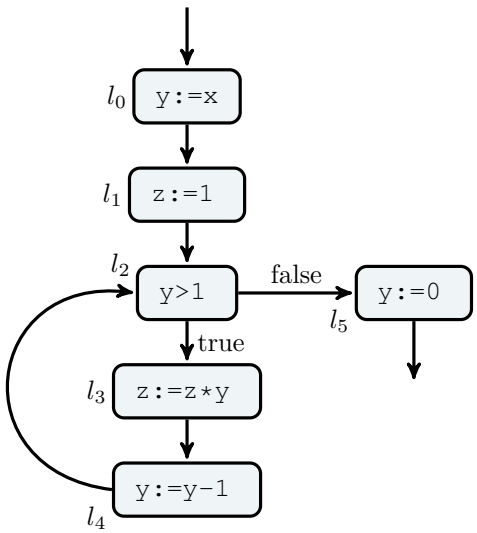


Figure 1: Flow graph